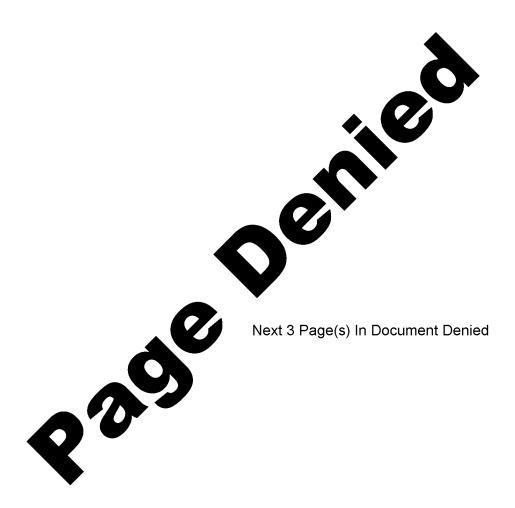
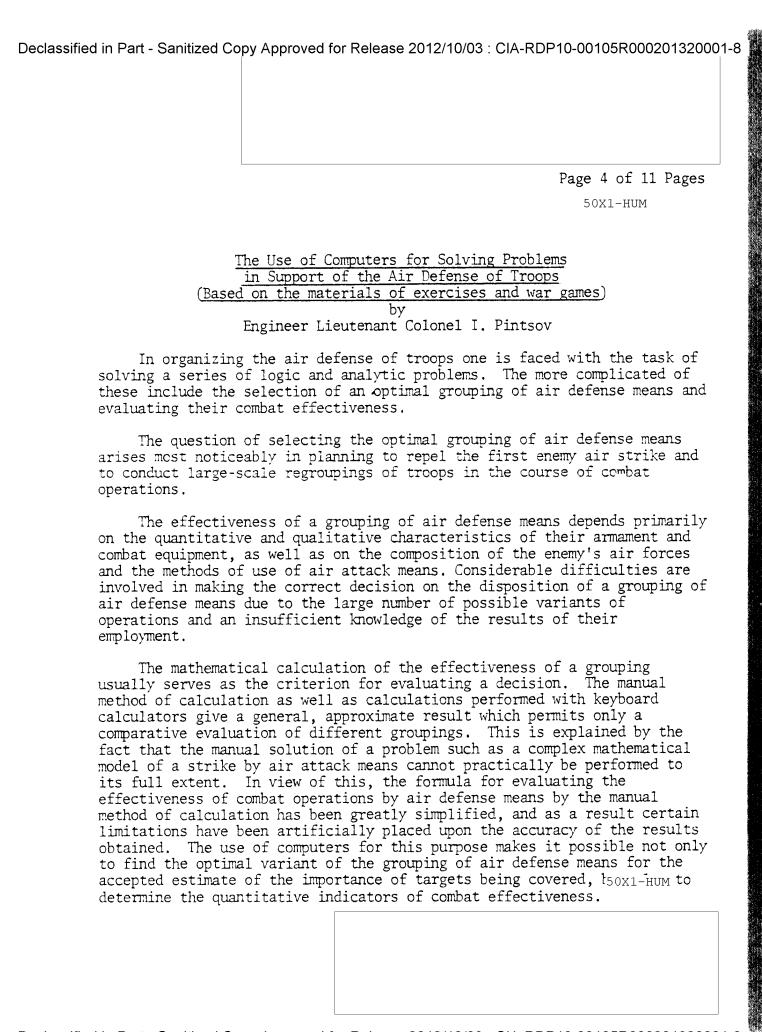
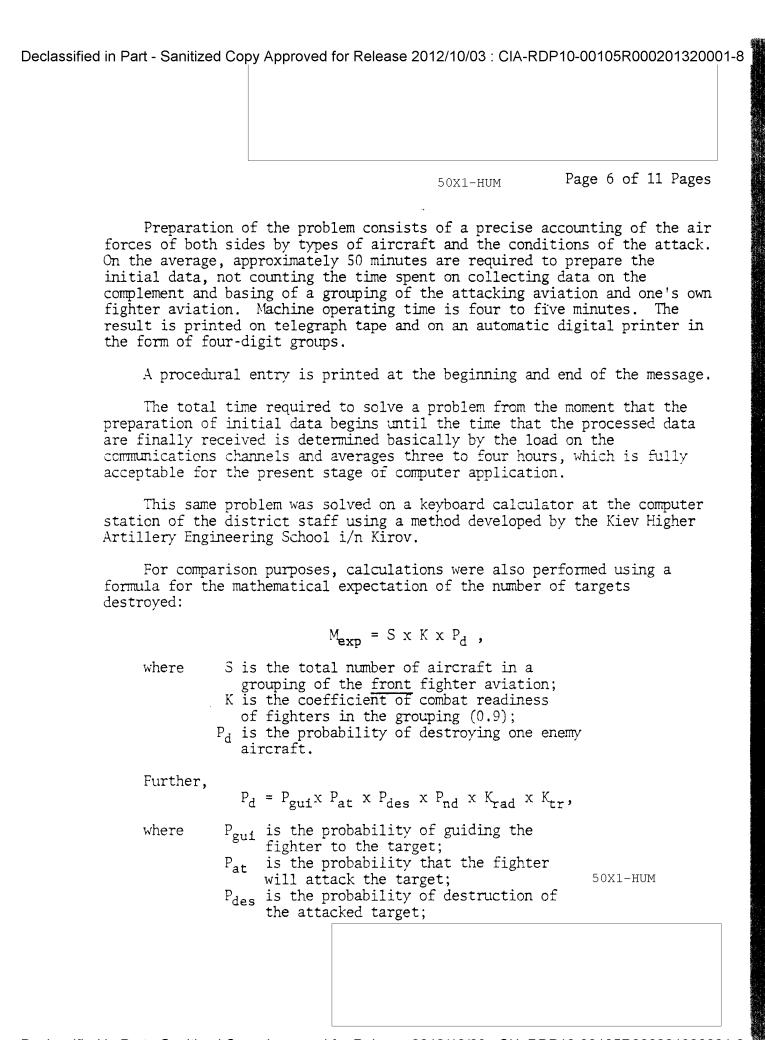
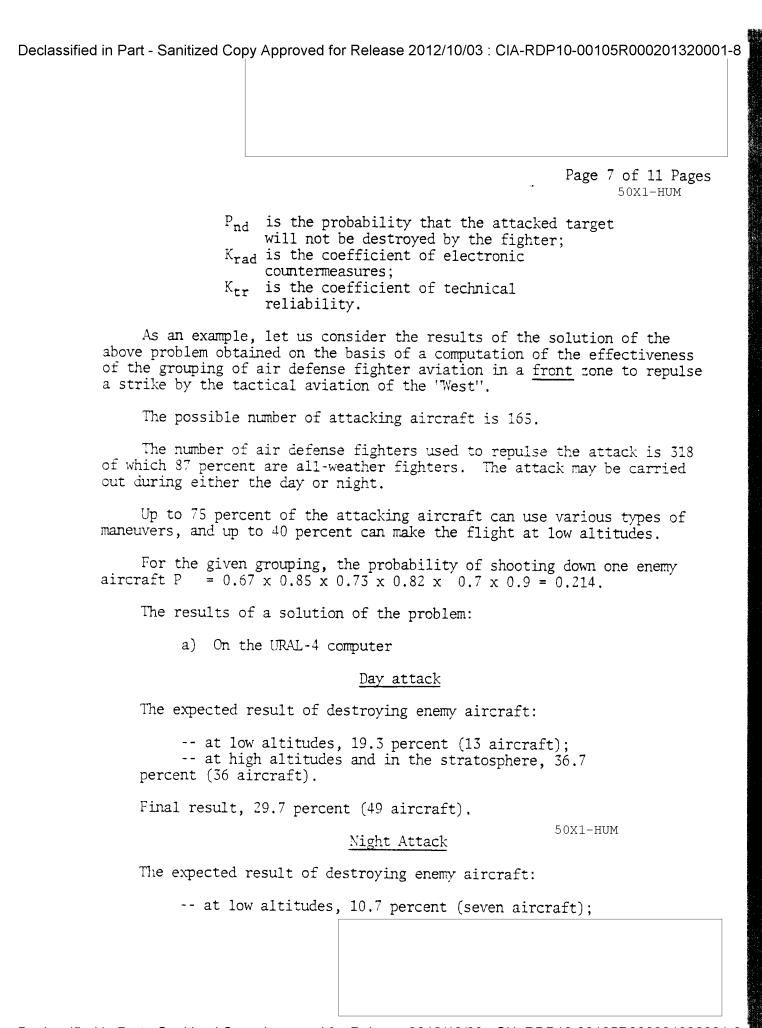
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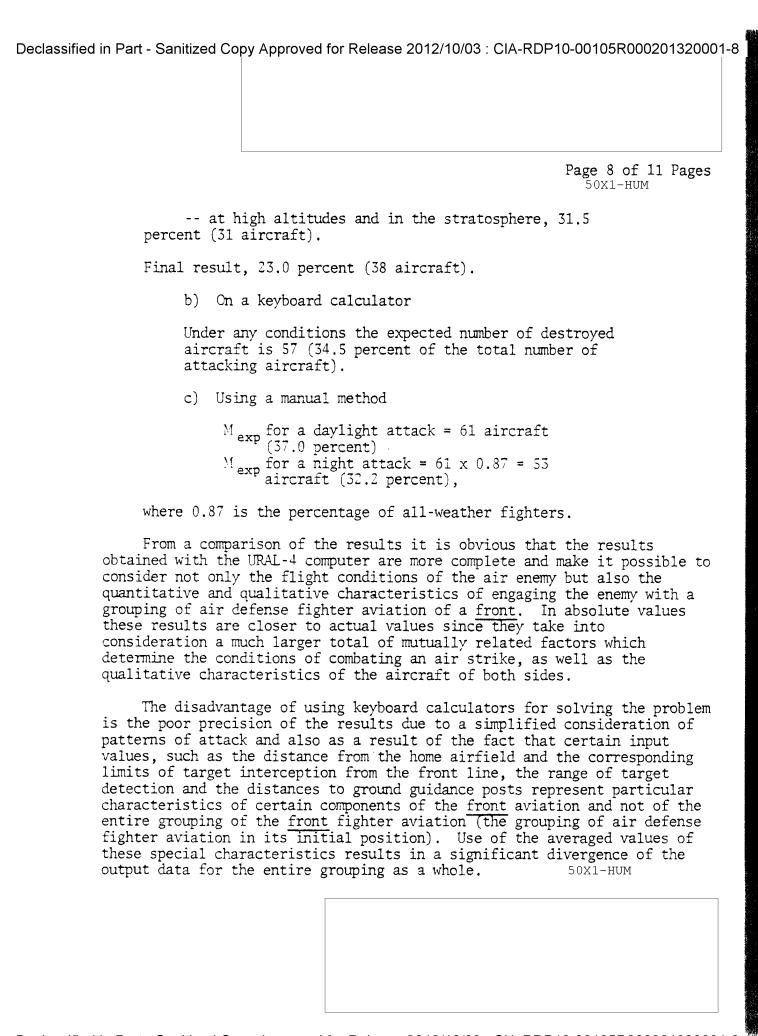




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In the Leningrad Military District a number of exercises and war games have been held in which studies were made of the use of computers for the automation and mechanization of the control of troops and to perform various labor-consuming computational tasks both in the planning of <u>front</u> operations as well as in carrying out such operations.
Calculations were made on the URAL-4 stationary general-purpose computer at the computer center of the Leningrad Military District.
The following problems were solved on the URAL-4 computer in support of the air defense of troops:
calculation of the effectiveness of the air defense fighter aviation; calculation of the effectiveness of a grouping of surface-to-air missiles; calculation of the movement of the air defense units of a front during an operation.
A total of 15 variants of the problems were solved.
The problem of evaluating the effectiveness of the combat employment of the fighter aviation in support of the air defense of a front was treated most fully in the exercises. The solution of this problem on the URAL-4 computer was worked out by one of the scientific research institutes.
The permanent data stored in the computer memory are the tactical-technical characteristics of different types of aircraft and the coefficients which determine the effectiveness of the combat employment of the aircraft and its armament by element.
The variable data are:
flight conditions (day or night, weather conditions, use of maneuvering and jamming); flight altitude (low, medium and high, stratospheric);the number of one's own fighters and fighter-bombers by type; the number of enemy aircraft by type.





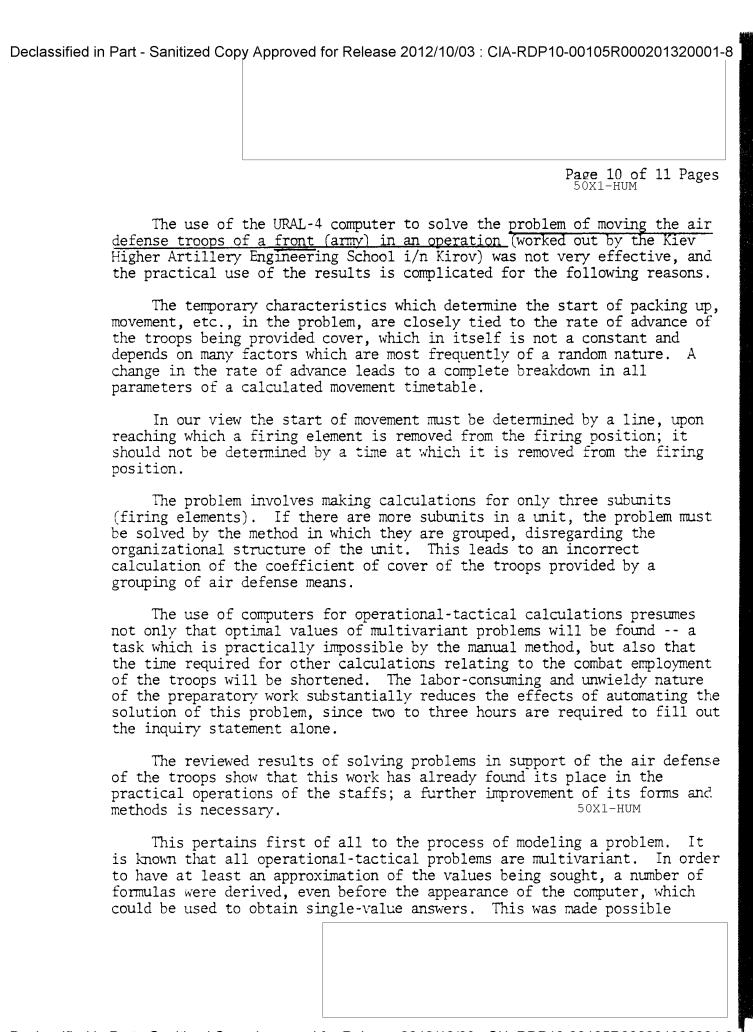


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destroying a which will d greater numb	lir targets by fighter	r aviation gives only ained by other method are used to represe	is to the extent that a
computer: in transformed which is not the results	shortcomings were for particular, the output by introducing a cert taken into consideration for each particular at to absolute values.	out data from the commain percentage of low tion in compiling the	w-flying aircraft ne initial data, and
into conside own fighter on the estim	coming of the algorithmation the duration of aviation due to enemy ate of the effectivention in support of the	of the attack and pos. Fire. This has a si ess of the combat em	mlovment of the
<u>units</u> was all problem was u	ectiveness of the comb so computed by three managements worked out by the Kiew keyboard calculator a	methodson the URAL v Higher Artillerv Fr	-4 computer (the
result the of targets pasuch understa surface-to-arcontrol of the understat of different of an attack probability of available to more advantage	ated results of the endir missile units is an his grouping (only certed value that was use components of the system and air enemy required and air enemy required and the officer-operator geous if the basic paragraphs.	zero to six percent ne of fire. In our of ffectiveness of the generalized fire controlled for the coefficier stems during combat. ires the input of a litial data, which are who is solving the prameters characterizing	of the total number opinion the reason for grouping of cal modeling of the ol was considered) and nts of effectiveness A mathematical model large number of e not readily problem. It would be

The result of solving this problem on a keyboard calculator was the destruction of from 10 to 20 percent of the targets passing through the zone of fire. The mathematical result is determined by using a model of an attack by an air enemy as the basis for the calculations.

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This problem should be worked out more thoroughly.



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through the use of different types of averaged coefficients in the calculations.
Mathematical models of such problems have the following shortcoming: certain averaged values of a series of quantities (coefficients) are entered into the memory of the computer beforehand, and therefore, as a rule, the invariance of the machine solution is not great. For example, in a problem involving the estimation of the effectiveness of a grouping of air defense fighter aviation, invariance comprises not more than six solutions.
In compiling a model of an attack by air means it is best to consider those variants which will create the most complex conditions of combat. The machine solution must provide the conditions for the optimal solution of the problem.
Usually the solutions give the result of the destruction of air targets but do not make it possible to estimate losses experienced by the active air defense means as a result of the air strike. This leads to gross errors both in original as well as in subsequent calculations of the effectiveness of the combat employment of air defense means in an operation.
Practice gained in the use of computers for operational-tactical calculations has shown the need for greater uniformity in the method of making inquiry statements. Otherwise, the work of staff officers will be greatly complicated and will lead to a waste of time and errors in the calculations.
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